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(Modified) PTO/SB/08A-B (10-96) Approved for use through 10/31/99. OMB 0651-0031

Substitute for form 1449A-B/PTO	TRADEMARK C	omplete if Known
	Application Number	09/656549 09 721,507
NFORMATION DISCLOSURE	Filing Date	September 6, 2000
STATEMENT BY APPLICANT	First Named Inventor	Joseph A. Affholter
	Group Art Unit	Unassigned
	Examiner Name	Unassigned
(use as many sheets as necessary)	Attorney Docket Number	02-104240US

	U.S. PATENT DOCUMENTS U.S. PATENT DOCUMENTS I.S. Patent Document I. Name of Patentee or Applicant of Date of Publication of Pages, Columns, lines,								
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				FOREIGI	N PATENT DOCUMEN	TS		
			Foreign Patent Docu			Date of Publication	Pages, Columns, Lines, Where Relevant Passages	T
Examiner Initials	Cite No.	Office	Number	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	of Cited Document MM-DD-YYYY	or Relevant Figures Appear	Ľ
1358		wo	00/00632		Phylos, Inc.	01-06-2000		
MA		wo	00/09679		Proteus	02-24-2000		
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	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS						
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T				
			 				
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^{*}EXAMINER: Initial if reference considered, whether er not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



(Modified) PTO/SB/08A-B (10-96) Approved for use through 10/31/99. OMB 0651-0031

Complete if Known Substitute for form 1449A-B/PTO 09/050549 09/721,507 **Application Number** Filing Date September 6, 2000 INFORMATION DISCLOSURE First Named Inventor Joseph A. Affholter STATEMENT BY APPLICANT **Group Art Unit** 1645 Unassigned **Examiner Name** JAN 1 6 ZUUT (use as many sheets as necessary) 02-104240US Attorney Docket Number

				S. PATENT DOCUMEN		Pages, Column A. Aines III
Examiner Initials	Cite No.	U.S. Patent Docur Number	Rind Code (if known)	Name of Patentee or Applicant Cited Document	Cited Document MM-DD-YYYY	Where Relevant Passages or Relevant Figures Appeal
my	AA	5,512,463		Stemmer	04-30-1996	1
	AB	5,514,588		Varadaraj	05-07-1996	1
	AC	5,605,793		Stemmer	02-25-1997	
	AD	5,763,239		Short et al.	06-09-1998	
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	Al	5,830,696		Short	11-03-1998	
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	AL	5,837,458		Minushull et al.	11-17-1998	
	AM	5,866,363		Pieczenik	02-02-1999	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	AN	5,876,997		Kretz	03-02-1999	X
	AO	5,925,749		Mathur, et al.	07-20-1999	
	AP	5,928,905		Stemmer, et al.	07-27-1999	
	AQ	5,939,250		Short, Jay M.	08-17-1999	
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	AT	5,948,666		Callen, et al.	09-07-1999	
	AU	5,958,672		Short, Jay M.	09-28-1999	
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my	ВА	6,001,574		Short et al.	12-14-1999	/
Examiner Signature		Diana B			ate 7/	19/04

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Substitute for form 1449A-B/PTO	PANERIS	omplete if Known
about to form 144071 bit 10	Application Number	-09/656549 09/721.507
NFORMATION DISCLOSURE	Filing Date	September 6, 2000
STATEMENT BY APPLICANT	First Named Inventor	Joseph A. Affholter
	Group Art Unit	1645
	Examiner Name	Unassigned
(use as many sheets as necessary)	Attorney Docket Number	02-104240US

Bry	ВВ	6,004,788	Short	12-21-1999	
1	ВС	6,030,779	Short	02-29-2000	
	BD	6,054,267	Short	04-25-2000	
	BE	6,117,679	Stemmer	09-12-2000	
	BF	6,096,548	Stemmer	08-01-2000	
mm	BG	6,132,970	Stemmer	10-17-2000	

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Examin er	No.	Office	Foreign Patent Docu Number		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-OD-YYYY	Pages, Columns, Lines, Where Relevant Passages T or Relevant Figures Appear
Initials	ВН	wo	97/07205		Novo Nordisk A/S	02-27-1997	
	BI	wo	97/20078		Affymax Technologies	06-05-1997	
	ВЈ	wo	97/25410		Novo Nordisk A/S	07-17-1997	
	ВК	wo	97/35957		Maxygen, Inc.	10-02-1997	
	BL	wo	97/35966		Maxygen, Inc.	10-02-1997	
	ВМ	wo	97/44361		Recombinant Biocatalysis Inc.	11-27-1997	
	BN	wo	97/48416		Recombinant Biocatalysis, Inc.	12-24-1997	
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	ВР	wo	97/48794		Recombinant Biocatalysis Inc	12-24-1997	
	BQ	wo	98/00526		Recombinant Biocatalysis Inc	01-08-1998	
	BR	wo	98/01581		Recombinant Biocatalysis Inc	01-15-1998	
1	BS	wo	98/13485		Maxygen, Inc.	04-02-1998	
	вт	wo	98/13487		Maxygen, Inc.	04-02-1998	
1	BU	wo	98/24799		Diversa Corp.	06-11-1998	
1)/2/	BV	wo	98/27230		Maxygen, Inc.	06-25-1998	/

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Substitute for form 1449A-B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

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_	RADERIER Complete if Known					
	Application Number	09/638549 09/721, 507				
	Filing Date	September 6, 2000				
	First Named Inventor	Joseph A. Affholter				
	Group Art Unit	1645				
	Examiner Name	Unassigned				
	Attorney Docket Number	02-104240US				

D		вw	wo	98/28416	Novo Nordisk A/S	07-02-1998	
\neg		вх	wo	98/31837	Maxygen, Inc.	07-23-1998	
		BY	wo	98/36080	Maxygen, Inc.	08-20-1998	
		BZ	wo	98/41622	Novo Nordisk A/S	09-24-1998	
T		CA	wo	98/41623	Novo Nordisk A/S	09-24-1998	
7		СВ	wo	98/41653	Novo Nordisk A/S	09-24-1998	
		СС	wo	98/42832	California Institute of Technology	10-01-1998	
		CD	wo	98/48034	Diversa Corp.	10-29-1998	
		CE	wo	98/58085	Diversa Corp.	12-23-1998	
		CF	wo	99/07837	Diversa Corp.	02-19-1999	
	7	CG	wo	99/08539	Diversa Corp.	02-25-1999	
	\exists	СН	wo	99/10472	Diversa Corp.	03-04-1999	
1		CI	wo	99/10539	Diversa Corp.	03-04-1999	V
	\neg	CJ	wo	99/19518	Diversa Corp.	04-22-1999	
1		СК	EP	0911396A2	Maxygen, Inc.	04-28-1999	
		CL	wo	99/21979	Maxygen, Inc.	05-06-1999	
	1	СМ	EP	0911396A3	Maxygen, Inc.	05-06-1999	
	1	CN	wo	99/23107	Maxygen, Inc.	05-14-1999	
	1	СО	wo	99/23236	Diversa Corp.	05-14-1999	
		СР	EP	0934999A1	Maxygen, Inc.	08-11-1999	
		ca	wo	99/41368	Maxygen, Inc.	08-19-1999	
	//	CR	wo	99/41369	Maxygen, Inc.	08-19-1999	
	// (cs	wo	99/41383	Maxygen, Inc.	08-19-1999	
	// (СТ	wo	99/41402	Maxygen, Inc.	08-19-1999	
- 1		cu	wo	99/45154	Diversa Corp.	09-10-1999	
	1	cv	wo	99/57128	Maxygen, Inc.	11-11-1999	
W	1	cw	wo	99/65927	Maxygen, Inc,	12-23-1999	

Examiner Date 7/9/9		 	l	
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(Modified) PTO/SB/08A-B (10-96) Approved for use through 10/31/99. OMB 0651-0031

Complete if Known Substitute for form 1449A-B/PTO Application Number 09/658549-09/72) Filing Date September 6, 2000 INFORMATION DISCLOSURE First Named Inventor Joseph A. Affholter STATEMENT BY APPLICANT 1645 **Group Art Unit Examiner Name** Unassigned (use as many sheets as necessary) 02-104240US **Attorney Docket Number**

Examin er Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	7		
My	CX	Chang, C., et al. (1999) "Evolution of a cytokine using DNA family shuffling." Nature Biotechnology 17:793-797.			
	CY	Christians, F.C. et al., (1999) "Directed evolution of thymidine kinase for AZT phosphorylation using DNA family shuffling." <i>Nature Biotechnology</i> 17:259-264.			
	CZ	Crameri et al., (1993) "10(20)-Fold aptamer library amplification without gel purification," Nuc. Acids Res. 21(18):4410.			
	DA	Crameri, A. & Stemmer W.P.C. (1995) "Combinatorial multiple cassette mutagenesis creates all the permutations of mutant and wildtype cassettes." <u>Biotechniques</u> 18:194-195.			
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	DE	Crameri, A. et al., (1998) "DNA shuffling of a family of genes from diverse species accelerates directed evolution." <i>Nature</i> 391:288-291.			
	DF	Gates, C.M. et al., (1996) "Affinity selective isolation of ligands from peptide libraries through display on a lac repressor 'headpiece dimer'". <u>Journal of Molecular Biology</u> 255:373-386.			
	DG	Minshull, J., Stemmer, W.P.C. (1999) "Protein evolution by molecular breeding." <u>Current Opinion in Chemical Biology</u> 3:284-290.			
	DH	Ness, J. et al., (1999) "DNA shuffling of subgenominc sequences of subtilisin." <u>Nature</u> <u>Biotechnology</u> 17:893-896.			
	DI	Patten, P.A. et al., (1997) "Application of DNA Shuffling to Pharmaceuticals and Vaccines." Current Opinion in Biotechnology 8:724-733.			
	DJ	Stemmer, W.P.C. (1994) "DNA Shuffling by random fragmentation and reassembly: In vitro recombination for molecular evolution." <u>PNAS</u> 91:10751			
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	DL	Stemmer, W.P.C. (1995) "The Evolution of Molecular Computation." <u>Science</u> 270:1510			
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(del)	DN	Stemmer, W.P.C. (1996) "Sexual PCR and Assembly PCR." In: <u>The Encyclopedia of Molecular Biology</u> . VCH Publishers, New York. pp. 447-457.			
Examin Signatu		Date Considered 7/19/04			

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Substitute for form 1449A-B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

C C	omplete if Known
Application Number	09/656549 09/721,507
Filing Date	September 6, 2000
First Named Inventor	Joseph A. Affholter
Group Art Unit	1645
Examiner Name	Unassigned
Attorney Docket Number	02-104240US

and	DO	Stemmer, W.P.C. & Soong, N.W. (1999) "Molecular breeding of viruses for targeting and other clinical properties." <i>Tumor Targeting</i> 4:59-62.	
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^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

September 6, 2000 Filing Date Joseph A. Affholter First Named Inventor 1645 **Group Art Unit**

Complete if Known

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Unassigned **Examiner Name** 02-104240US Attorney Docket Number

			U.	S. PATENT DOCUMENTS		
Examiner	Cite	U.S. Patent D Number	ocument Kind Code	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Pages, Columns, lines, Where Relevant Passages
Initials	No.	Number	(if known)		MM-DD-YYYY	or Relevant Figures Appeal
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	AB	5,783,431		Peterson et al.	07-21-1998	RECEIVE
	AC	5,798,208		Crea	08-25-1998	\ ,,,,, \
	AD	5,824,485		Thomspon, et al.	10-20-1998	1 \ / 400/
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	АН	6,168,919		Short	01-02-2001	
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Application Number

				CODEICN	PATENMT DOCUMEN	TS		
Examiner Initials	Cite No.	Office	Foreign Patent Docume		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	т
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MM	AM	wo	95/22625		Affymax Tech. N.V.	08-24-1995		
100	AN	wo	96/33207		Glaxo Group Limited	10-24-1998		
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	AQ	wo	99/29902		California Institute of Technology	06-17-1999	X	
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	Ald	wo	00/53744		Diversa Corp.	09-14-2000		
	AV	wo	00/58517		Diversa Corp.	10-05-2000	\	

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Examiner Signature	Date Considered	1910	7

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Signature

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

C	omplete if Known]
Application Number		21.507]
Filing Date	September 6, 2000	1-22-00	
First Named Inventor	Joseph A. Affholter	DEAL	\ ,_
Group Art Unit	1645	RECE	$N \vdash D$
Examiner Name	Unassigned		
Attorney Docket Number	02-104240US	JUN 0 7	bnn1

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS TECH CENTE						
Examin er Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.						
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,	AZ	Bass et al. (1988) "Mutant Trp repressors with new DNA-binding specificities" Science 242:249-245)						
	ВА	Botstein & Shortle (1985) "Strategies and applications of in vitro mutagenesis" Science 229:1193-1201						
	88	Breyer and Sauer (1989) "Mutational analysis of the fine specificity of binding of monoclonal antibody 51F to lambda repressor" <i>J. Biol. Chem.</i> 264:13355-60						
	вс	Caldwell et al. (1992) PCR Methods Applic. 2:28-33						
	BD	Carter (1986) "Site-directed mutagenesis" Biochem J. 237:1-7						
	BE	Carter (1987) "Improved oligonucleotide-directed mutagenesis using M13 vectors" Methods in Enzymol. 154: 382-403						
	BF	Carter et al. (1985) "Improved oligonucleotide site-directed mutagenesis using M13 vectors" Nucl. Acids Res. 13: 4431-4443						
	BG	Dale et al. (1996) "Oligonucleotide-directed random mutagenesis using the phosphorothioate method" Methods Mol. Biol. 57:369-374						
	вн	delCardayre, S.B. and Raines, R.T. (1995) Anal. Biochem. 225, 176						
	ВІ	Delegrave and Youyan (1993) Biotechnology Research 11:1548-1552						
	BJ	Eghtedarzadeh & Henikoff (1986) "Use of oligonucleotides to generate large deletions" Nucl. Acids Res. 14: 5115						
	вк	Fritz et al. (1988) "Oligonucleotide-directed construction of mutations: a gapped duplex DNA procedure without enzymatic reactions in vitro" Nucl. Acids Res. 16: 6987-6999						
	BL	Grundström et al. (1985) "Oligonucleotide-directed mutagenesis by microscale 'shot-gun' gene synthesis" Nucl. Acids Res. 13: 3305-3316						
	ВМ	Guzman et al. (1995) "Tight regulation, modulation, and high-level expression by vectors containing the arabinose PBAD promoter" <i>J. Bacteriol.</i> 177(14):4121-4130						
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Examine	er '	Date 7/19/04						

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known				
Application Number	09/656549 09/721,507			
Filing Date	September 6, 2000-1\-22-00			
First Named Inventor	Joseph A. Affholter			
Group Art Unit	1645			
Examiner Name	Unassigned			
Attorney Docket Number	02-104240US			

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ВО	Kramer et al. (1984) "Point Mismatch Repair" Cell 38:879-887	
BR	Kramer et al. (1984) "The gapped duplex DNA approach to oligonucleotide-directed mutation construction" Nucl. Acids Res. 12: 9441-9456	
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ВТ	Kunkel (1985) "Rapid and efficient site-specific mutagenesis without phenotypic selection" Proc. Natl. Acad. Sci. USA 82:488-492	
BU	Kunkel (1987) "The efficiency of oligonucleotide directed mutagenesis" in <i>Nucleic Acids & Molecular Biology</i> (Eckstein, F. and Lilley, D.M.J. eds., Springer Verlag, Berlin)	
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BW	Leung et al. (1989) Technique 1:11-15	
вх	Lim and Sauer (1991) "The role of internal packing interactions in determining the structure and stability of a protein" <i>J. Mol. Biol.</i> 219:359-76	
BY	Ling et al. (1997) "Approaches to DNA mutagenesis Anal Biochem. 254(2): 157-178	
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CA	Meador, J and Kennell, D. (1990) Gene 95:1	
СВ	Meador, J. et al. (1990) Eur J. Biochem. 187:549	
СС	Nakamaye & Eckstein (1986) "Inhibition of restriction endonuclease Nci I cleavage by phosphorothicate groups and its application to oligonucleotide-directed mutagenesis" Nucl. Acids Res. 14: 9679-9698	
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CG	Ostermeier et al. (1999) "Combinatorial Protein Engineering by Incremental Truncation," Proc. Natl. Acad. Sci. USA, 96: 3562-67	

Examiner Signature	Mara Por	Date Considered	7/19/	09
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Complete if Known				
Application Number	09/050549 09/72/1807			
Filing Date	September 6, 2000 (1-22-00)			
First Named Inventor	Joseph A. Affholter			
Group Art Unit	1645			
Examiner Name	Unassigned			
Attorney Docket Number	02-104240US			

СН	Ostermeier et al. (1999), "Incremental Truncation as a Strategy in the Engineering of Novel Biocatalysts," <i>Biological and Medicinal Chemistry</i> , 7: 2139-44	
CI	Porter et al. (1997) Nucleic Acids Res. 25(8):1611-1617	
c)\	Reidhaar-Olson et al. (1988) Science, 241:53-57	_
СК	Reidhaar-Olson et al. (1991) Methods Enzymol. 208:564-86	
CL	Sakamar and Khorana (1988) "Total synthesis and expression of a gene for the a-subunit of bovine rod outer segment guanine" Nucl. Acids Res. 14: 6361-6372	
СМ	Sayers et al. (1988) "Strand specific cleavage of phosphorothioate-containing DNA by reaction with restriction endonucleases" Nucl. Acids Res. 16: 803-814	
CN	Smith (1985) "In vitro mutagenesis" Ann. Rev. Genet. 19:423-462	
СО	Stemmer et al., (1995) "Single-step assembly of a gene and entire plasmid form large numbers of oligodeoxy-ribonucleotides" <i>Gene</i> , 164:49-53	
СР	Taylor et al. (1985) "The rapid generation of oligonucleotide-directed mutations at high frequency using phosphorothioate-modified DNA" <i>Nucl. Acids Res.</i> 13: 8765-8787 (1985)	
CQ	Taylor et al. (1985) "The use of phosphorothioate-modified DNA in restriction enzyme reactions to prepare nicked DNA" Nucl. Acids Res. 13: 8749-8764	
CR	Wells et al. (1985) "Cassette mutagenesis" an efficient method for generation of multiple mutations at defined sites" <i>Gene</i> 34:315-323	
CS	Wells et al. (1986) "Importance of hydrogen-bond formation in stabilizing the transition state of subtilisin" <i>Phil. Trans. R. Soc. Lønd. A</i> 317: 415-423	
СТ	Zhao and Arnold (1997) "Functional and nonfunctional mutations distinguished by random recombination of homologous genes," <i>Proc. Natl. Acad. Sci. U.S.A.</i> 94(15):7997-8000	
CU	Zhao, et al., "Molecular evolution by staggered extension process (StEP) in vitro recombination," Nature Biotechnology (March 1998), 16(3):258-61	
CV	Zhou et al., (1995) Biotechniques 19:34-35	
CW	Zhou et al., (1998) "Regulatory Roles of the P Domain of the Subtilisin-like Prohormone Convertases," J. Biol. Chem., 273(18):11107	
СХ	Zoller & Smith (1982) "Oligonucleotide-directed mutagenesis using M13-derived vectors: an efficient and general procedure for the production of point mutations in any DNA fragment" Nucleic Acids Res. 10:6487-6500	
CX	Zoller & Smith (1983) "Oligonucleotide-directed mutagenesis of DNA fragments cloned into M13 vectors" Methods in Enzymol. 100:468-500	
CZ	Zoller & Smith (1987) "Oligonucleotide-directed mutagenesis: a simple method using two oligonucleotide primers" <i>Methods in Enzymol.</i> 154:329-350	

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^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.